

DOCUMENT RESUME

ED 099 005

IR 001 407

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TITLE The Dissemination of Educational R&D Products:
Research and Policy Issues for the Federal
Government. Paper No. 4984.
INSTITUTION Rand Corp., Santa Monica, Calif.
REPORT NO Rand-P-4984
PUB DATE Mar 73
NOTE 33p.
EDRS PRICE MF-\$0.75 HC-\$1.85 PLUS POSTAGE
DESCRIPTORS Educational Research; Federal Programs; *Government
Role; *Information Dissemination; Information
Sources; Information Systems; Instructional
Materials; Policy; *Research and Development
Centers

ABSTRACT

Federally sponsored educational research and development projects are not achieving their full potential; much of their material is of little or no practical utility, and much that is of value is not well disseminated or is not readily available. The National Institute of Education might improve the quality of research and development by: (1) examining the range of activities, products, and services that now exist; (2) initiating research programs which examine the procedures for dissemination and adoption of these activities, products, and services; (3) making improvements for the short run in existing programs and institutions. (SK)

ED 099005

THE DISSEMINATION OF EDUCATIONAL R&D PRODUCTS: RESEARCH
AND POLICY ISSUES FOR THE FEDERAL GOVERNMENT

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March 1973

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

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P-4984

R001 407

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An earlier version of this paper was presented at a symposium on Educational Research and Development sponsored by the National Institute of Education in Washington, D.C., on December 11, 1972. Other papers presented at the symposium were:

The NIE and the Knowledge Base, Joan S. Bissell, John Golenski, and Sheldon H. White, Laboratory of Human Development, Harvard University

Incentives for Innovation in the Public Schools, John Pincus, The Rand Corporation (P-4946, January 1973)

Evaluating the National Institute of Education, Senta A. Raizen, The Rand Corporation (P-4942, February 1973)

The Conduct of Development in Education, Richard E. Schutz, Southwest Regional Laboratory for Educational Research and Development, Los Alamitos, California

**THE DISSEMINATION OF EDUCATIONAL R&D PRODUCTS: RESEARCH
AND POLICY ISSUES FOR THE FEDERAL GOVERNMENT**

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I. INTRODUCTION

This paper discusses issues related to federal government programs for the dissemination of educational R&D products, and suggests general policy and research guidelines in this area for the National Institute of Education.

Federal dissemination activities are spread throughout numerous agencies and offices that play some role in educational research and development, principally in Washington, but at the regional and local level as well, including many federally sponsored experimental or "impact" programs such as Experimental Schools or Title I. The formal institutions of dissemination are largely centered in the National Institute of Education, in particular with the National Center for Educational Communication (NCEC), which manages the decentralized ERIC clearinghouse network, as well as other dissemination programs. The "product" of most education research is a document which presents the conclusions of a study or an evaluation. The product of actual development can be (a) a way of organizing and structuring some set of behaviors that are designed to help make education more efficient or productive (e.g., PBBS, individualized instruction), (b) a physical product designed to accomplish the same objectives (e.g., a new science kit, a new building design), or (c) some combination of these (e.g., the Sullivan reading program). Most "physical" products are developed by commercial publishers or other segments of private industry; many behavioral products are developed by these companies, but many are also

^{*} Helpful comments on an earlier draft of this paper were made by David Clark (University of Indiana), Arthur Cohen (ERIC Clearinghouse for Junior Colleges), and John Pincus (The Rand Corporation).

developed by private and nonprofit research corporations under federal or local contract. The products of educational R&D are diverse, but most research does not lead to development--it leads to a written study or report that is rarely carried further.

In addition to the products of research and development there exists something called educational information--which is neither research nor a developed product, but simply, as the name implies some kind of information about education--about research in progress, about practice, about debate and argument among professionals on various topics, and so on.

Federal dissemination efforts embrace all of these possibilities--research products, development products (which imply some preceding research), and information.

This paper first summarizes key problems now faced by education practitioners who might wish to use R&D products or information, and the factors that contribute to these problems. The paper then goes on to consider a general research and policy posture for NIE in this area, relevant research topics of interest, and the question of appropriate NIE policy for the short run.

II. THE PRESENT SITUATION*

Practitioners who try to use educational R&D products and information face three major problems.**

First, practitioners often find it difficult to identify, locate and acquire potentially useful materials. District-level specialists in large school districts with well supported research libraries, and some practitioners who live in the vicinity of special information centers, have somewhat less difficulty than others. However, even for these somewhat special cases, and certainly for most practitioners, these difficulties are very real.

Second, practitioners find it hard to get the help they need in order to overcome these difficulties. Many educators do not at first have a clear understanding of the relationship between their problems

* In reviewing current problems of access to educational R&D products, we argue as if it can be taken for granted that most education practitioners are motivated to find and make active use of the best available information. As we shall see, this assumption (and dissemination activities that rely on it) is open to question.

** Education practitioners can be specialists at either the district or building level, including administrators as well as specialists in testing and guidance, curriculum, or personnel training; or generalists, meaning largely classroom teachers. However, the distinction between specialists and generalists does not appear to have an important bearing on dissemination requirements, for the kinds of dissemination activities required to meet the needs of the specialist and those required to meet the needs of the generalist are sufficiently similar to make the distinction uninteresting from the perspective of federal policy [Greenwood and Weiler, 1972].

The research community faces a number of related problems in attempting to use educational R&D products or information. However, since the needs, resources and training of researchers (both basic and applied) are quite different from those of practitioners, this paper does not discuss these problems in detail. In practice it seems likely that federal policies designed to improve dissemination for practitioner users will lead to improvements for the research community also. [Ibid.]

and their requirements for R&D products or information. They may need assistance in defining problems clearly, or in understanding the character of the difficulties they have identified. Even with adequate problem definition, most practitioners are not well trained in the appropriate search techniques, and will require the assistance of a professional specialist in locating information that might be useful.

Finally, even with problems adequately identified, relevant search areas pinned down, and information in hand, most practitioners will need some assistance with the practical interpretation of the products they have found. They are usually being asked to use either printed material or microfiche, in the case of a research report, or a printed manual of procedure in the case of developed materials. Printed materials, however, are necessarily somewhat abstract, and often fail to capture the specific character of the implementation problems faced by practicing educators. Moreover, these materials are not interactive. If upon reading a report or research study a practitioner formulates additional questions for which answers seem required before he can take action, he cannot query the printed page, and will usually look for additional assistance before acting. At present he finds this assistance difficult to obtain.*

Finally, the practitioner who has successfully identified candidate R&D products related to his interests finds that he often has little guidance as to their probable utility, reliability or validity, and must essentially make these judgments for himself on the basis of his own instincts.

* In California recently, the state legislature mandated the introduction of program budgeting procedures in every school district, and hired a firm to develop detailed implementation guidelines. The guidelines were duly circulated; local districts immediately began searching for experts who could help them interpret and implement the new procedures.

III. CONTRIBUTING FACTORS

Some thought has been devoted to these and related problems in recent years, and it is now possible to summarize a number of reasonable explanations for this situation. What follows is an attempt to provide such a list as the basis for further discussion of federal research and policy in this area.

1. Many R&D products and much of what passes for educational information are of little or no practical utility. Thus, while it is appropriate to consider possible changes in current dissemination activities, it is important as well that we understand the very real constraints on the system posed by the material it has to work with. Even the best dissemination system in the world will be of little use to anyone if it has little of consequence to disseminate.

2. At the same time, research or development products of potential value to educators do exist, from evaluations of specific programs, to studies of the reliability and utility of achievement tests, detailed descriptions of new curricula, reports of practical solutions to administrative problems, and dozens of others. Thus, while it is a truism that there is great need for better research of direct utility to the practicing educator, there are doubtless useful products in the system as well. However, there is at present virtually no organized effort to distinguish these products from those which are less useful. For practical purposes, the dissemination system now treats all information as having equal value. Hence, though the average practitioner may be poorly equipped for this task by training and temperament, and has little time to spare, he must invariably perform the screening and assessment function for himself.

3. An enormous amount of educational research has been accomplished during the last several decades, leading to the publication of a great many books, reports, professional articles and occasional papers. However, only a comparatively small effort is made today to review and synthesize research outcomes across the various areas that might be of

interest and practical utility to professional educators.* In part perhaps because of this low level of effort in research synthesis, there has also been little attempt to translate the results of research into practical program advice for professional educators.

4. We have not yet developed adequate procedures for the collection and validation of information on the best of current practice--although it is this kind of information that educators rely upon most heavily--nor for the translation and extrapolation of successful local practices into general policy guidance for the implementation of educational programs designed to meet the varied needs of different student populations.**

5. The practitioner who tries to identify and acquire a helpful research or development product faces multiple, partly redundant sources of information with widely varying visibility and accessibility--federal, state, local and private--with virtually no coordination of disparate efforts. He can try district resources; if those do not yield results, he can look in his local public or university library. But he may also need to go directly, by mail or by phone, to an ERIC clearinghouse, a local Information Resource Center, a county-run curriculum lab, or to any one of dozens of other possible sources [see, e.g., Wanger, 1971].

6. If the practitioner overcomes the problem of multiple and physically remote access points, he must still cope with confusing arrangements for system entry from any given locale. He faces a plethora of different indices, card files, microfiche storage systems, technological aids and guides to information. These various sources of entry to the information system have little procedural or structural uniformity, for they were not created through system-wide agreements

* NCEC attempts to do some of this job through its Targeted Communications Program and support of various ERIC Clearinghouse Information Analysis products. While these efforts appear to be fairly popular with practitioners who are aware of them, their quality and scope are uneven, and they have not received a high level of federal funding support [System Development Corporation, 1972; Greenwood and Weller, 1972].

** Objections to the idea that this kind of work might prove valuable are discussed briefly on pp. 18-19.

on the ground rules for decisions pertaining to indexing strategies, selection of key descriptors, or subject matter partitioning.

7. The practitioner who seeks the advice and intercession of professional experts finds a system that is often passive, that is not structured to respond in depth to direct inquiry from the user, and makes little attempt to anticipate information demand and consumption patterns. Marketing mechanisms--the identification of client needs, and an active attempt to meet those needs--are rare. To some extent, this appears to reflect a system bias toward the research community as the client, and away from an operational mode of dealing directly with the practicing educator as the principal user. It could be argued that this is in some respects a sensible way of dealing with multiple and partly redundant resources, for researchers are better able to wend their way through this complex system than are practitioner users. At the same time, this could be said to represent acquiescence in the creation of what might be described as a "closed loop" for research information, wherein the research community uses the system for assistance in the creation of new research results, which in turn go back into the system and again to the research community. There are, to be sure, many breaks in the loop--applied researchers do communicate directly with education practitioners and practitioners do have access of sorts. Nevertheless, the apparent system-wide bias against direct response to the practitioner user effectively "freezes out" many potential practitioner clients from timely access to the information they seek.*

Federal Government Policies and Assumptions

We have discussed problems faced today by practitioners who seek educational R&D products or information, and factors that contribute

*The new education extension agent program is designed to remedy some of these problems, but it is not yet clear what its impact will be, since there have not been many accompanying changes to related elements of the dissemination system [Sieber, Louis and Metzger, 1972].

to these problems. We turn now to a discussion of federal government policies and assumptions that appear to have played an important role in the creation and maintenance of present dissemination arrangements. We then go on to suggest some research and policy guidelines that might be considered in order to resolve these problems.

Much of the present information dissemination system was inherited by the federal government, either as it now exists or in some incipient version, when the government first expanded its education activities significantly in the middle '60s. The multiplicity of sources, for example, is a natural consequence of the decentralization of education in the United States. When the federal government did initiate dissemination activities of its own, it identified and moved to ameliorate an important problem--the absence of a central collection and indexing agency for information that did not find its way into professional journals, and was therefore lost forever to most potential users. The limited sponsorship of selected information analysis products, such as bibliographies, research reviews and state-of-the-art papers was also begun. These initiatives could not have been adequate to the task of overcoming the problems we have discussed above [Burchinal, 1968].

Federal policies to date have been characterized by a relatively low level of total effort, and by reluctance to pursue objectives that go much beyond the limited goal of providing a passive archival system. At the same time, practitioner demands on the system (requests for direct assistance) have led on the one hand to a variety of uncoordinated efforts to respond ad hoc, and, more recently, to a more formal response through the creation of the education extension agent program. The picture that emerges on balance is one of some confusion about the appropriate clients for federal programs and the appropriate objectives of federal policies. For example, while regional laboratories have been supported by the federal government in their efforts to develop improved curricula for the public schools, federal efforts to disseminate information about the results of these development programs have been relatively low key, and it is difficult for a practitioner

today to acquire pertinent information about this work by querying the federal dissemination system.

While many decisions must of course await better information about the nature of user needs and the best ways in which to meet them, the federal government has made relatively poor use of available knowledge about possibilities for improvement--from existing research studies, from the field operations of federal and other (state, county, private) components of the information dissemination system, and from informed judgments of professionals who work in the system. Regular system evaluation procedures have not been implemented, and there has been no consistent program of research designed to lead to system improvement. Federal policymakers may have been either unaware of many of the problems discussed above, or unable to point to ways in which key problems could be resolved.

The federal government appears to have been making some key assumptions that may be unwarranted. First, the government appears to have assumed that there is an abundance of useful educational information and many good R&D products. In fact, this does not seem to be the case.

Second, the government appears to have assumed that the passive, archival mode for the dissemination of R&D products can provide adequate access to the information that is needed, for both the research and practitioner communities. The assumption also seems unwarranted.* Multiple and physically remote access points and nonuniform, poorly designed search tools have in fact made it quite difficult for both researchers and practitioners to have convenient access to the information they seek.

Finally, the government appears to have assumed that adequate access will in turn be sufficient to insure that education decisionmakers at the local level will make use of existing products and information in

* It now appears to be assumed that the provision of system-user intermediaries such as education extension agents will further insure adequate access for the practitioner community (see, however, footnote on p. 7, above).

order to improve education. This assumption would appear to ignore the realities of the actual incentives of educators to make decisions that could result in changes from current and accepted practices.

If the argument presented so far is valid, it is not unreasonable to suppose that the institutions and policies for dissemination that have emerged at the federal level, while useful in many ways, do not yet meet the real needs of educators today. However, they may provide the essential basis for moving to an improved system in the years ahead.

IV. NIE'S RESEARCH AND POLICY POSTURE

Two things are clearly required--decisions and information. Decisions are needed to elaborate a clear federal policy in this area; information is needed to help validate, refute, or amend the hypotheses and assertions posited here and elsewhere about dissemination activities, and to provide fresh insights into ways in which improvements can be effected. The NIE might think in terms of four broad steps:

1. Develop a clearer understanding of the range of activities, products, and services that now exist. We now have, or can obtain in short order, most of the information we need in order to lay out the spectrum of existing practice in the dissemination of educational R&D products and information. The proper frame of reference is not just federal activities, but the broader perspective of all existing educational information resources--federal, state, local and private. Before any subsequent decisions can be made, and before it will be possible to know where to direct research efforts most efficiently, we should try to have as clear an idea as possible of the range of services, resources, and institutional arrangements now in existence.

2. Make an initial assessment of ways in which we would like to see these activities, products and services improved. In effect, this requires at least a tentative decision about what a national educational information system might best look like. At one end of the spectrum, for example, something like the present arrangement might be viewed as most appropriate, in that the decentralized nature of educational practice may require decentralized, multiple, redundant sources of educational information. In this case, the cost of eliminating redundancy and confusion in the system would be viewed as exceeding the benefits that could be expected from such an effort. Alternatively, it might be argued that present arrangements are wasteful and inefficient, and that they hold little hope for providing practitioners with the information they will need in the years to come, particularly with anticipated growth in both the amount and quality of educational R&D products over the next decade. These judgments are certain to occasion

a good deal of heat, and should indeed be the subject of widespread debate. Nevertheless, they are a key step, for judgments about desirable directions for a national educational information system, while they will not be immutable, must surely be made, and made early, if federal programs that will inevitably be part of a larger set of activities throughout the country are to be rationally cast within the framework of explicit objectives for the nation as a whole.

3. Make tentative decisions about the proper role of the federal government in leading, sponsoring or implementing programs designed to effect desired changes. This implies a requirement for analyses of the extent to which desired practices and services cannot or should not be provided elsewhere, a review of present and anticipated resources available to the federal government, and difficult judgments about what it would be appropriate for federal ambitions to embrace. On the one hand, for example, it could be argued that the federal government should not be interested in any further expansion of its presence to the local level, and that its activities should be restricted essentially to funding state, county and local efforts to disseminate information, together perhaps with some modest federal effort roughly equivalent to that which is being made today. Alternatively, it might be concluded that it would be wrong to count on local initiatives to provide the necessary services in all cases, and that only ambitious federal programs will ensure uniform and adequate access to educational information in every school district.

4. Assess the utility of various institutional arrangements at the federal level for accomplishing desired objectives. A decision about the institutional form for federal efforts follows logically--but must follow, not precede--the first three steps described above. Institutional structure should be dictated by antecedent decisions about federal objectives, and these decisions must in turn be preceded by a clear understanding of the kind of national information dissemination system that would best serve the requirements of both practitioners and researchers.

Each of the broad steps described above implies a requirement for various kinds of information about the best way to proceed. Much of this information is already available and can be pulled together in order to assist policymakers; much remains to be gathered. We take up this topic below.

V. MAJOR RESEARCH QUESTIONS

We have suggested that a logical first step would be the development of a clearer understanding of the range of activities, products and services that now exist. Existing research studies and professional judgments could also be mined for insight and advice regarding federal programs in this area. In addition, a carefully thought out and coordinated program of research, institutional design, and experimentation could be initiated over the next several years in order to better inform and continue to test tentative decisions that may be made in the interim. Such a research program should address at least the following major questions:

1. How do the incentives of education practitioners to seek, acquire and use educational R&D products and information vary with variations in

- o the substance of the information,
- o information format and style,
- o product availability,
- o strategies for marketing information products,
- o practitioner roles in the education system,
- o practitioner objectives (e.g., maintenance, improvement, reform), and
- o opportunities to put products and information to practical use?

We can be reasonably certain that incentives to seek and use educational information and R&D products do not exist independent of incentives and opportunities to make and implement policy decisions about educational programs in the classroom, school, or district. These may be incentives and opportunities to maintain educational programs at an existing level of quality, to implement new and improved programs, or to reform (or retain) inefficient practices. What matters is that these incentives and opportunities often precede incentives to acquire and use educational information, and can determine the extent of the information acquired, the kind of information sought, the speed with

which it is desired, the format considered most appropriate, the style of its acquisition, and the uses to which it will be put. While we can say this much with reasonable certainty, we do not know the ways in which these variables interact. It is probable that incentives and opportunities are related to perceptions held by different actors of:

- o opportunities for professional advancement (status, esteem, income);
- o the risks that may accompany a decision to act or withhold action;
- o opportunities to pursue deeply held beliefs.

Thus the need for and uses made of educational information and R&D products are related in some way to the capacity and willingness to act in education, and the nature of this capacity--the incentive structure, the opportunities, the origins of policy decisions--is something we must know more about if information dissemination is to have a direct bearing on the process of educational change.

2. What institutional arrangements would be most efficient for meeting the range of product/service objectives selected by the federal government? We have argued that form should follow function--but how can different functions best be performed? Research in this area would attempt to determine the most appropriate source of support for information system components, the function and client focus for each component, the research and data collection responsibilities of the system, and the location of various components and subcomponents (e.g., centralized or decentralized locations for different functions). The nature of the services to be provided by the system will influence the number, size and location of system access points for various clients, as well as the responsibilities of system management and professional staff. Procedures for the management and coordination of system activities would have to be considered, as would system capacity for growth and renewal. System design would reflect not only decisions with respect to overall objectives, but technical judgments concerning the best way to maximize information processing and communication efficiencies, attract the most

skilled and dedicated staff, and develop the most effective relationships with other institutions, both federal and nonfederal. We are some distance from being able to judge what shape such a system should take, what its component parts should be, where they should be located, what management procedures should be considered, or what kinds of staff to look for.

3. How should specialists of various kinds be used to assist practitioners to make optimum use of available R&D products and educational information? Some practitioners today have access to information specialists who mediate or negotiate their requests for information in various topic areas. In addition, NCEC is now planning to put a number of education extension agents in the field, in part to fulfill this function. We have not yet collected and analyzed the bulk of available information pertaining to existing services of this kind, and little attempt has been made to study the impact on educational decisionmaking of the provision of varieties of services with personnel who have different kinds of training. We are therefore not yet clear about what kinds of people such specialists should be--what kinds of training they should have, what organizational affiliations or institutional character they should adopt, and what kinds of services they should provide. We do not have a clear understanding of the criteria that should be applied to their selection, nor of the arrangements that should be made for their continued training. A university reference librarian is an information specialist; so is an Information Resource Center specialist who has been to a special training program at a regional laboratory. What is the difference between the kinds of services these two people can provide; how effective are they in their different roles; how much has their training cost; who can they best service? We should try to look at these and at other existing "personnel" models in order to get a better idea of the most desirable characteristics for this critical component of the dissemination system.

4. Is it possible to translate research results into practical policy guidance for educators? Educational R&D, like that in many

social policy fields, is characterized by a division of functions and specialties which largely removes the research community from the responsibility for drawing operational implications from the results of its work. While some applied research does make a serious effort to take advantage of the results of basic research into human behavior and social organization, there remain as yet few interdisciplinary attempts to design specific educational programs (together with detailed specifications for implementation) that are based directly upon a spectrum of education and social science research results, and could be tested in the light of those results. It appears, for example, that research has not yet been able to identify any particular combination of education resources that is consistently and unambiguously related to educational success [Averch, et al., 1972]. At the same time, because contradictory research results do exist, and because research tools are not adequately refined in many areas, more information of a practical nature--testing the application of research hypotheses as they relate to operational programs--might help to eliminate some of this ambiguity. But it is not clear that this goal, though it may be desirable, can be attained. It is difficult to imagine what the practical program implications might be for many research findings. We need more work in this area in order to see whether or not guidelines for the translation of research into practical programs can be established, and to refine ways in which program outcomes can be tested in terms of original research conclusions. One way in which to begin such work might be to devise institutional efforts to bring basic and applied researchers together with the designers of educational programs in such a way that program designers are forced to test the theories and assumptions underlying their designs against the substantive knowledge and hypotheses of the research community. Since there is so much diversity of opinion and belief in the research community with respect to fundamental issues of human behavior, and since this lack of consensus is in part responsible for the vacuum into which program designers have moved, this would be an extremely difficult task, but one that could be rewarding not only for program design, but for the research community as well.

5. Can we establish reliable procedures for the widespread collection of information on the best of current practice, and the translation of this information into usable models of exemplary practice? This kind of research is extremely difficult. At the least, such efforts might include an attempt to provide descriptive syntheses of the systemic effects of different combinations of resource inputs (including student characteristics), teaching processes, and organizational structures. Information thus acquired might then be inspected for our ability to extrapolate "general rules" for program success under various circumstances, and such rules would in turn have to be translated into practical implementation advice for working educators. Even so, the settings for program replication will be largely unique, implying a requirement for the kind of expert assistance with program implementation techniques that is not readily available today (and where research under 3 above might be of some assistance).

Eventually, a broad information collection effort might have to be initiated, based on decisions about relevant performance criteria, program characteristics of interest, and related matters. The machinery for such an information collection effort is not available and would have to be designed. Careful attention would have to be given to the mechanisms through which this information was to be aggregated, analyzed, synthesized, and translated into a product of some utility.

When this research issue is discussed it is commonly objected that we cannot reach agreement on what "good" practice looks like (multiplicity of objectives); that we could not identify it even if we agreed on what it was (crudeness of current measures); and that, in any case, current practice is mostly bad and not to be encouraged, so that this kind of work is not worth the effort. While these objections deserve to be taken seriously, they would appear on balance to lend added support to the suggestion that much serious work of the kind described above remains to be done before it will be possible to judge

the desirability of mounting expensive efforts to collect information on current practice.*

6. How can technology be used more effectively to give both practitioners and researchers better and faster access to the existing knowledge base? One way in which an extensive set of dissemination services might be decentralized would be to create a decentralized technology, tying districts into the services of a regional information net that could respond to requests from remote users. We do not yet know how--or if--this could be accomplished, and this issue deserves further exploration before final decisions are made about the location of federally managed or sponsored information system access points. In addition, little has been done to experiment with ways in which the school building (meaning building administrators and teachers) could be tied directly to information resources. It is widely understood that neither teachers nor principals have adequate time to use standard library resources, even when such resources are physically convenient and accessible. (This is quite apart from the time required at such a location to sort out the confusion of multiple points of entry to the information system.) It has been argued that an attempt to tie schools directly to information would not be worth the cost and effort. This may well be the case, but we know of no experimental efforts to verify such assertions. Indeed, what may be the case today may not be the case tomorrow, for if the NIE is successful in many of its objectives, and if better information for practitioners can be developed by the research community, the products that may be available for teachers and principals may improve in quality substantially over the next decade. Should that be the case, we might want to begin to experiment now with ways in which the school building could be given more direct access to those products in the years to come.

* It is hard to resist making the observation that many of the strongest and most eloquent attacks on current practice come from professionally successful, highly educated critics who are products of the public school system.

In addition, education researchers are not well served by present system technology. In particular, we cannot now collect and make available to researchers around the country the growing mass of longitudinal educational and related social science data presently stored on computer tapes in a variety of federal, state, university and private data banks around the United States. Every new research project that attempts to scan available data for new insights, or use data already collected as the context for comparison with fresh information, must start essentially from scratch to search the country seeking access to various existing data files. It is not yet possible--though it may be technologically feasible--for the researcher to have access to a wide variety of data without moving from a local computer terminal. Technological options for providing these services also need to be explored.

7. How can we establish widely acceptable screening, rating and classification procedures for educational R&D products and information?

One serious problem now facing the potential user of educational R&D products is that little attempt is made on his behalf to differentiate high-quality products from those which are less useful. It seems obvious that rating procedures cannot simply assign one-dimensional classifications to R&D products; at the same time it is not clear what these procedures should be, nor whether procedures can be agreed upon that will be acceptable to the broad mass of practitioner users as well as to researchers. Fairly complex procedures may have to be devised--procedures that differentiate among various levels of information utility for different purposes and for different users. A first-level screening might be fairly crude, seeking only to establish whether the material is of sufficient professional quality overall to be accepted into the system. These might be comparatively easy judgments to make, as long as the bases for the judgments were made explicit and the professional credentials of the judges were widely accepted. In addition, rejected material would probably have to be placed in a separate information pool for inspection by users who did not trust these judgments. After this initial screening, more refined and complex rating procedures might have to be instituted, so that material could

be rated, not along a scale of excellent to poor, but in a manner that indicated the level of sophistication required of the potential user, the objectives of the research, the scope of the research conclusions, the professional interests of users who would stand to benefit most from the product, uses to which the product has been put, user response to date, and so on. These categories remain to be devised and tested.

The research topics described above can be approached in a variety of ways; it is not our purpose in this paper to present an extended discussion of research strategies or designs. One aspect of this research that does deserve special mention, however--and special consideration when designing a research strategy--is the probable systemic and interactive nature of various activities and outcomes of interest. In particular, key interactive effects may exist between institutional arrangements for the dissemination of information, the use of various kinds of specialists to assist practitioner and researcher clientele, procedures for the collection and validation of information on current practice, and the uses of technology. Ambitious and comprehensive research designs aimed at increasing our understanding of these interactive effects may eventually be required in order to support informed policy decisions.

VI. POLICIES FOR THE SHORT RUN

We turn finally to the question of policies that may be most appropriate in the short run for the support or modification of existing programs and institutions, for though NIE may initiate new research and experimentation in this area, the world is not likely to stand still. Three criteria suggest themselves for weighing policies to be undertaken in the immediate future:

1. The policies should maximize the probability that the government will be in a good position to implement policy recommendations that may eventually flow from a concerned program of research, design, and experimentation.

2. In the event that these research, design, and experimentation efforts prove disappointing, or in the event that research points to organizational, practical, political or economic considerations that militate against the implementation of significant system change, short-run policies should at the same time serve the objective of improving the existing system.

3. The policies should capitalize on existing resources.

The application of these criteria to current options need not yield conflicting policy recommendations. On the contrary, by attempting to meet all three criteria the NIE may be able to place itself in a good position both for obtaining desired system changes in the long run, and for achieving needed short-run improvements.

The first criterion implies a requirement to (a) keep long-run policy options open and, (b) attempt to build substantive, psychological and political momentum towards the possibility of eventual comprehensive system change. The best way to achieve these objectives may also be the optimum way to meet the second criterion of achieving needed improvement in the short run:

First, in order to keep long-run policy options open, the NIE would want to prevent existing programs from hardening into permanent institutions, and existing momentums from growing out of control.

This suggests a policy, for example, of deliberately withholding long-term commitments to existing components of the federal information dissemination system, and an emphasis on experimental variations with new components of that system in order to collect as much incidental information as possible without making a commitment to any one variant. Clearly, this approach would also support (and in some respects be a prerequisite for) a policy of seeking short-run improvements to the existing system.

Second, one way in which to build substantive, psychological, and political momentum for eventual comprehensive system change would be to begin now to make changes that will almost certainly be necessary in any case. Thus, whatever long-run policy recommendations emerge from further research, it now seems reasonably likely that a number of steps, among others, will almost certainly be required, even assuming quite modest federal ambitions for the future:

- o More coordination, through federal leadership, of diffuse state, local, federal and private efforts.
- o Further consolidation of existing federal programs in order to eliminate redundancy and management inefficiencies.
- o Introduction of improved screening mechanisms in order to cut down on the amount of low-quality material that is collected and disseminated by the system.
- o More intensive efforts to collect detailed information on local practice, together with efforts to screen and classify that information for different varieties of users.
- o More emphasis on the review and synthesis of existing research.
- o Some effort to translate existing research findings into practical program implementation advice for practitioners.

- o Continuing attention to the improvement of system management and organization.
- o Work on the improvement of access and entry to the system--better search tools, more aggressive product marketing, and more visible entry points.

These are also the kinds of changes one would probably want to make in order to improve the existing system. Here, policies that seem likely to be included in recommendations for the achievement of most long-run objectives probably support short-run improvement goals as well.

Finally, one efficient way in which to approach the task of improving the existing system is to capitalize on existing resources. The most important existing resources are people and technology. There appear to be many bright, inventive people working in the field of educational information dissemination. These people have valuable experience, and they have been responsible for some of the most cogent and constructive criticism of the dissemination system. By involving the best people at an early stage in efforts at improvement--bringing them into the debate and planning stages of the work, insuring open lines of communication as work proceeds--the NIE would surely benefit from their knowledge and experience. At the same time, it would be creating important psychological and political momentum for potential long-run change among a constituency--the working professionals in the field--whose support for federal policies will be of critical importance to the government.

By exploring ways in which technology can be utilized to improve the efficiency and responsiveness of the system, the NIE might well be able to make important system improvements in the short run while laying the groundwork for more ambitious and sophisticated technological changes in the future. For example, it is almost certainly important to begin at an early stage to acquire more information about certain kinds of man-machine interactions, for if long-run policy recommendations should include proposals for substantial new federal investments in technology to serve both the

researcher and practitioner user, policymakers will need high-confidence estimates of the impact and utility of various technological aids. To make these estimates they will require longitudinal data, and should not wait until after long-run objectives and policies have been thrashed out to begin collecting that information.

To recapitulate briefly, it is the thesis of this paper that because of present serious difficulties with the effective dissemination of educational R&D products and information to education practitioners, the NIE should:

1. Undertake a carefully thought out program of research, design, and experimentation that will enable it to:
 - (a) Step back and look at the national picture taken as a whole.
 - (b) Decide how and why this picture differs from what policymakers would prefer to see, and what the federal government should and can do about it.
 - (c) Acquire the necessary information for federal policy decisions in the years to come.
2. Implement parallel efforts to improve the existing system without making any long-term commitments to present or currently planned institutions or programs.
3. Involve the best professionals now working in the system in designing and implementing both long-run research and short-run improvement efforts.

If properly planned and executed, these initiatives should be mutually supportive, and the chances for obtaining beneficial long-run system change should be enhanced without sacrificing attention to immediate problems.

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Many of the arguments and propositions in this paper are based on findings or hypotheses presented in an extensive literature on research dissemination, knowledge utilization, and incentives for innovation, as well as on the author's own research and thinking. For the most part, this literature has been used here as the basis for composite summaries of research findings, so that reference to one or a few specific studies would be misleading. Key studies relied on for this purpose, as well as other selected works of interest in this area, are included in this bibliography, which is not intended as a comprehensive listing of the relevant literature in the field.

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